Ames Laboratory
Oversight and Assurance Program

This plan describes the Ames Laboratory Oversight and Assurance Program and the multitude of processes and systems utilized by line management, internal oversight functions, and independent oversight organizations to ensure effective and efficient programs that support mission success. Comments or questions related to the program described herein should be directed to the contact persons listed below:

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Note: Original Sign-off Record with signatures is on file with ESH&A.

1.0 REVISION/REVIEW LOG

This document will be reviewed annually.

Revision Number	Effective Date	Contact Persons	Pages Affected	Description of Revision
0	12/31/06	Wessels	All	Original Draft
1	1/31/07	Wessels	All	Original Draft, with additions requested by Ames Site Office, Plan 10200.034 rev 1 revdesc.doc
2	1/01/08	Wessels	All	Update per DOE O 226.1A, :\Doc&Recs\DCP\Revision Description\Plan 10200.034 rev 2 revdesc.doc

2.0 INTRODUCTION

The Department of Energy (DOE) issued Policy 226.1A, *Department of Energy Oversight Policy* on 5-25-2007, and thereby established a department-wide oversight process to protect the public, workers, environment, and national security assets effectively through continuous improvement. The policy covers operational aspects of ES&H (environment, safety, and health), safeguards and security, cyber security, and emergency management. DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy*, dated 7-31-07, provides direction for implementation of the policy and has an objective to ensure that contractor assurance systems and DOE oversight programs are comprehensive and integrated for all aspects of operations essential to mission success.

Ames Laboratory has numerous assurance mechanisms, with proven track records, that support the Department-wide oversight process to ensure compliance with applicable requirements, pursue excellence through continuous improvement, provide for timely identification and correction of deficient conditions, and verify the effectiveness of completed corrective actions. The primary Ames Laboratory processes that fulfill the requirements of DOE Order 226.1A, *Implementation of Department of Energy Oversight Policy*, are detailed through existing program documentation including:

- *Integrated Safety Management System Description (ISMS) and Worker Safety and Health Program Description* (Plan 10200.016),
- *Integrated Safeguards and Security Management System Description* (Plan 10200.029),
- *Environment, Safety, Health and Assurance (ESH&A) Program Manual* (Manual 10200.002),
- *Quality Assurance Program Plan* (Plan 10200.026), and
- *Emergency Plan* (Plan 46300.001).

The Laboratory utilizes information derived from the numerous mechanisms described in these program documents to document its overall performance toward meeting the requirements and program objectives of the Department of Energy and Iowa State University. These assurance mechanisms support identification, collection, and resolution of deficiencies and process improvement opportunities. Many of the causal factors related to the identified issues are fully addressed within the base levels of line management and through application of the specific organization's resources. Ames

Laboratory departments conduct ongoing self-assessment efforts to document and further determine compliance with the Laboratory's Contract Statement of Work and performance indicators. Ames works in partnership and cooperation with DOE and other external organizations, as appropriate, in the self-assessment process to assist the DOE in accomplishing an effective and appropriate level of oversight. This work includes, but is not limited to, the development of self-assessments, performance updates, operational awareness processes, and continuous improvement activities as reported to DOE at mid-year and year-end as formal self-evaluation reports.

The year-end Performance Evaluation and Measurement Plan (PEMP) report includes an overall summary of performance for the period, ratings for each element and the Laboratory overall, and a summary of key strengths and opportunities for improvement. The Laboratory develops its performance summary using the output of all of the oversight and assurance program elements presented throughout this document. DOE, as a part of its responsibility for oversight, evaluation, and information exchange, provides an annual programmatic appraisal and other appraisals, and reviews of the Laboratory's performance of authorized work in accordance with the terms and conditions of its contract. The Office of Science, through the DOE Ames Site Office Manager, has lead responsibility for this oversight and an annually written assessment of the Laboratory's performance, based upon the process described in the contract, Appendix B. The performance levels achieved for the specific goals, objectives, measures, and targets are the primary criteria for determining the Laboratory's final performance evaluation and rating.

In accord with the principles of continuous improvement, Laboratory line managers, department managers, upper management, ISU and DOE utilize the results of oversight and performance evaluation to focus new and improved efforts toward effective and efficient processes supportive of the Laboratory's mission.

2.1 Purpose and Scope

The DOE's oversight policy and order are designed to ensure protection of the public, workers, environment, and national security assets, through process that are effective and promote continuous improvement. Ames Laboratory hereby establishes and documents how its oversight program efforts fulfill the intent of DOE's oversight directives. The processes and programs described herein are primarily focused on safety, safeguards and security cyber security, and emergency management functions but also provide appropriate assurance of the Laboratory's compliance with various other requirements related to infrastructure.

This plan was submitted to DOE for approval, and ensures that the Laboratory's comprehensive assurance systems and DOE's oversight programs are integrated for the operations essential to the Laboratory's mission success, and will thereby provide assurance that DOE activities are safe and secure.

2.2 Integrated Oversight Programs

The Laboratory's oversight and assurance activities are designed to be comprehensive and effective, yet efficient, and integrated with the programs and operations essential to mission success. Several DOE directives include contractor requirements for oversight and assessment activities, and Ames Laboratory has developed programs and processes to address these requirements. The primary programs and documents of the Laboratory's assurance activities are summarized by the following descriptions.

Integrated Safety Management System

The Ames Laboratory *Integrated Safety Management System (ISMS) and Worker Safety and Health Program Description (ISMS)* (Plan 10200.016) documents the primary systems, programs, plans, policies, and processes employed to support the principles and functions of the Department of Energy's Policy 450.4 *Safety Management System Policy* and Executive Order 13148, *Greening the Government Through Leadership in Environmental Management*, and 10 CFR Part 851 *Worker Safety and Health Program.* The ISMS Description provides a road map of the Laboratory's policies and practices that establish an environment where safety activities and functions are an integral part of the Laboratory's mission. It describes the principal safety programs and practices that provide a safe and healthful work environment for the protection of workers, the public and the environment. It is built upon processes and mechanisms designed according to the principles of quality assurance, and it is a fundamental Plan-Do-Check-Act cycle. The primary mechanisms of the Laboratory's ISMS include Readiness Review, Needs Assessment Procedure, Training, Program/Department Walk-Throughs, and Independent Walk-Throughs. These mechanisms were developed as part of the Laboratory's quality assurance program and are fully integrated with the Laboratory's safety efforts.

Environment, Safety, Health and Assurance (ESH&A) Program

The primary environment, safety and health, and quality assurance processes are documented in the Laboratory's *Environment, Safety, Health and Assurance (ESH&A) Program Manual* (Manual 10200.002). It incorporates the requirements of environment, safety, and health standards referenced in the Ames Laboratory contract and DOE directives, with the requirements for quality assurance and training. Major topical programs of this manual include: Introduction, Quality Assurance, Training, Industrial Hygiene, Industrial/General Safety, Environmental Protection, Radiological Protection, Fire Protection, Emergency Preparedness and Site Security, and Assessments. Additional manuals, plans, and procedures provide additional program definition and implementation requirements.

Quality Assurance Program

In addition to the quality assurance program description provided by the ESH&A Program Manual and in fulfillment of *10 CFR 830 Subpart A* an Ames Laboratory *Quality Assurance Program (QAP) Plan* (Plan 10200.026) has been written and approved by DOE. Where necessary and applicable the implementation of the QAP is supported by additional guidance as provided in DOE G 414.1-2A, and ANSI/ASQ Z1.13-1999. The QAP is designed to be implemented in a manner that provides reasonable assurance of adequate protection of workers, the public, and the environment from adverse consequences, taking into account the work to be performed and associated hazards.

Integrated Safeguards and Security Management System

The Ames Laboratory Integrated Safeguards and Security Management System (ISSMS) is built upon processes and mechanisms designed according to the principles of security management and quality assurance. The practices are described in the Laboratory's *Integrated Safeguards and Security Management System Description* (Plan 10200.029), and provide a formal, organized system for planning, performing, assessing, and improving the secure conduct of work. The Laboratory does not conduct classified research, does not have a classified mailing address, does not maintain security clearances for its staff and has Category IV quantities of nuclear materials. Ames' history of a supportive security culture is built upon sound practices and open communication of security concerns among all levels of line management. Ames utilizes generic security principles and graded application of DOE requirements consistent with the inherent risks of Laboratory activities to effectively administer processes that protect the personnel, property, facilities, and information of the Laboratory.

Emergency Management Program

The *Emergency Plan* (Plan 46300.001) and the *Emergency Plan Implementation Procedure* (Procedure 46300.010) establish and document the Laboratory's emergency preparedness activities and assigned responsibilities. Hazard assessments of the site concluded the Hazard Classification level is low (minor on-site and negligible off-site impacts). Emergency management is therefore conducted according to the criteria of a base program that will not reach an Alert Level Operational Emergency. Due to the low hazard level at Ames and the timely availability of community services, emergency operations rely heavily on off-site responders for fire, medical, and police response. An in-house Emergency Team (consisting of safety, environmental, protection, and other support specialists) responds to minor emergencies that don't require off-site assistance and assists off-site responders as necessary. Annual assessments are conducted by the Emergency Coordinator, and include a review of the Emergency Plan and the Emergency Plan Implementation Procedure.

Cyber Security

The Cyber Security Program has been established to maintain a secure, yet open environment for information systems, consistent with a laboratory that does not conduct classified research or maintain classified information. Primary documentation resides in the Laboratory's Cyber Security Protection Plan (CSPP). The CSPP is updated as major changes occur to the environment, and associated risks are continuously monitored. Cyber Security is recognized as a management responsibility, and all levels of line management are responsible for exercising security in their day-to-day operations and long term planning. All information systems are controlled and maintained by the respective departmental manager or by the Laboratory Information Systems office. All systems at Ames Laboratory are required to conform to the management and operational controls specified in NIST SP 800-53 for the appropriate level of risk required to protect the Laboratory's information and information systems.

3.0 RESPONSIBILITIES

LABORATORY DIRECTOR and DEPUTY DIRECTOR – The Laboratory Directorship is ultimately responsible for providing contractor assurance systems that are comprehensive and integrated with DOE oversight programs for all aspects of operations. The Director and Deputy Director support and entrust the Laboratory's line management and program managers to establish and perform processes to ensure protection of the public, workers, the environment, and national security assets.

PROGRAM MANAGERS – The ESH&A Manager is responsible for development and oversight of safety and quality assurance program requirements. The S&S Program Director is responsible for coordination of safeguards and security interests, development of the Site Security Plan, and communication of the Laboratory's security interest to Laboratory staff and DOE officials. The Cyber Security Manager is responsible for development, implementation and maintenance of the cyber security program and architecture according to requirements for a DOE unclassified cyber security system. The Emergency Coordinator is responsible for coordinating the overall emergency management of the Ames Laboratory, including planning, preparedness, and emergency response.

PROGRAM DIRECTORS and DEPARTMENT MANAGERS – Program Directors and Department Managers are responsible for supporting and participating in the Laboratory's efforts for oversight within their organization.

EMPLOYEES – Employee are responsible for providing information about their activities to ensure appropriate identification of deficiencies and opportunities for improvement, and are responsible for conducting work in a safe, secure, and business proper fashion. Employees are responsible for workplace observations and are empowered with stop work authority.

4.0 PROGRAM ELEMENTS

Ames Laboratory program elements are designed to provide effective and efficient oversight activities that are commensurate with the hazards and risk posed by the Laboratory's operations. Description of the hazard and risk levels associated with operational aspects of environment, safety, and health; safeguards and security; cyber security; and emergency management are summarized as follows:

- The Laboratory's activity-based Readiness Review process has defined, identified, documented, and addressed potential hazards associated with research and support activities. The process includes participation of line management and safety, engineering, and facility specialists to determine the hazard level of activities, based on specific criteria dealing with the magnitude (seriousness of potential harm) and scope (area of effect) of the hazard, as well as the risk (realistic potential for the hazard to have an impact of a particular scope and magnitude) involved. Typical office activities are classified as Hazard Level I, most experimental research activities and support activities are Hazard Level II, and a few activities are characterized as Hazard Level III. Typically Ames Laboratory environment, safety, and health processes are designed to address operational activities of low hazard and low risk.

- Safeguards and security processes are designed for an open facility that does not conduct classified research, has no classified information, does not maintain security clearances for its staff, has Category IV quantities of nuclear materials, and is integrated with the facilities and activities of Iowa State University. The Laboratory makes the results of its research program and the consequent technological developments available to the broadest possible spectrum of domestic industrial and private section recipients through a variety of technology transfer mechanisms and external interactions.
- The Ames Laboratory Cyber Security Program is developed to address the threats typical at a non-classified DOE research laboratory. Although, Ames does not conduct classified research and maintain classified information, Ames Laboratory recognizes the threat to its systems and data is significant and growing, as in all organizations. Therefore processes have been developed and implemented to address current and foreseeable threats to Ames Laboratory cyber resources and its supporting infrastructure, including environmental, natural, and human threats.
- Emergency Preparedness processes are designed according to the criteria of a base program that will not reach an Alert Level Operational Emergency as past hazard assessments of the site conclude that the Hazard Classification level is low with minor on-site and negligible off-site impacts.

The mechanisms described in the Laboratory's safety, security, cyber security, and emergency management programs ensure program deficiencies and improvement opportunities are typically worked at the appropriate organizational station. Many of the issues are fully addressed by line management and through application of the specific organization's resources, while some programmatic and institutional-level issues require significant resource commitments and institutional changes that impact Laboratory's business strategy or require active, visible support of Laboratory's upper management. Ames prioritizes resource allocations through its annual budgeting process. Funding needs are based on input from responsible department managers and subject matter experts. Needs are documented according to instructions communicated by the Laboratory's Budget Officer. Budget requests, with documented justification of need, are developed with assistance and direction from Budget Office analysts to ensure that each package represents the cost of accomplishing the required level of activity. For indirect funded programs, incremental budget requests are prepared if additional levels of funding are required to provide new or significantly modified activities or out-of cycle funding needs.

4.1 Assessments

4.1.1 Self-Assessments

The Laboratory conducts assessments at a variety of management levels to determine the effectiveness of policies, requirements, and standards, as well as implementation status. Program/Department Walk-Throughs are a form of self-assessments performed by management for self identification and correction of deficiencies, as well as organizational awareness. These walk-throughs are discussed in the Management Assessment section. At the Laboratory level, Independent Walk-Throughs are performed by safety and engineering specialists with participation of upper management to assess the

Laboratory's overall compliance with safety, security, engineering, and life safety requirements, and communicate the Directorship's support for and awareness of workplace and operational hazard mitigation. Additionally, topical appraisals are performed by safety, safeguards and security, cyber security and emergency management specialists to provide periodic validation of compliance with safety requirements and direct feedback on areas of improvement. The frequency and rigor of topical appraisals are determined by specialists after consideration of statutory or DOE requirements, Walk-Through data, injury/illness data, lessons learned information, Event Reporting program, employee safety concerns and / or other "feedback" information. Each topical appraisal is documented via a written report that is kept on file in the ESH&A Office. Independent Walk-Throughs and topical appraisals are discussed in the Internal Independent Assessment section.

Ames Laboratory functional lead offices conduct ongoing self-assessment efforts as the principal means of determining compliance with the Laboratory's Contract Statement of Work and performance indicators. Ames works in partnership and cooperation with DOE and other external organizations, as appropriate, in the self-assessment process to assist the DOE in accomplishing an appropriate level of oversight. This work includes, but is not limited to, the development of self-assessments, performance updates, operational awareness processes, and continuous improvement activities as reported to DOE at mid-year and year-end as formal self-evaluation reports.

4.1.2 Management Assessments

Group/Section Leaders, Safety Coordinators/Representatives, Program Directors and Department Managers are the primary participants in management assessments. Additionally, ESH&A has responsibilities for tracking of employee concerns and trending of deficiencies. Manager Assessments are also described in a sub-section of Section 10, *Assessment Program* of the *ESH&A Program Manual* (Manual 10200.002).

While each individual is responsible for the quality and safety of her/his activities, supervisors and Group/Section Leaders are accountable for oversight, direction, and guidance of work activities. Program Directors/Department Managers assess the allocation of resources and the management of hazards associated with the activities of the Groups/Sections within their organizations. Group/Section Leaders and Program Directors/Department Managers, or their Safety Representatives/Coordinators periodically review the work being conducted within their organization and correct identified safety deficiencies. Likewise, line managers are responsible for oversight of safeguards and security, cyber security and emergency management related program implementation applicable to activities. Programs and Departments utilize Assistant Computer Protection Managers (ACPMs) and system administrators to fulfill their implementation and oversight responsibilities. Formal documentation of this effort is not required, but unresolved issues are to be presented to the appropriate Program Director/Department Manager, ESH&A manager, Safeguards and Security Program Director, Cyber Security Officer, or Emergency Coordinator.

The Program Directors/Department Managers (with the Safety Coordinator) conduct a walk-through at a minimum frequency of once per year (Procedure 10200.014 *Program/Department Walk-Throughs*). These walk-throughs are primarily focused on safety issues, but also encompass safeguards and security and emergency management issues. Hazard Identification training (AL-130) is mandatory for

Safety Coordinators and Representatives and suggested for group leaders. Safety Coordinators and Representatives are also provided training (AL-031) on preparation of Program/Department Walk-through Reports and the Needs Assessment Program.

Observations from walk-throughs, appraisals, and other internal assessments are classified as Findings, Strengths, or Noteworthy Practices.

Finding: A finding is a determination of deficiency pertaining to implementation of a requirement based on a recognized inadequacy or weakness. Findings are categorized as levels 1, 2, or 3. This categorization is necessary to identify the degree of management formality and rigor required for the correction, tracking to closure, and trending of findings.

Level 1 Finding: Determination of deficiency of major significance that warrants a high level of attention on the part of line management. Typically these reflect a gap in addressing requirements or a systemic problem with implementing requirements. If left uncorrected, this level of finding could negatively impact the Laboratory's mission.

Level 2 Finding: Determination of deficiency that represents a non-conformance and/or deviation with implementation of a requirement. Multiple determinations of deficiency at this level, when of a similar nature, may be rolled-up together into one or more Level 1 Findings. Level 2 findings can be further qualified by noting the significance of the issue as: *Moderate,* conditions that could cause minor injury or minor environmental or programmatic impact; or *High,* conditions that could cause a severe injury or significant environmental or programmatic impact.

Level 3 Finding: Determination of deficiency where it is recognized that improvements can be gained in process, performance, or efficiency already established for meeting a requirement. This level of finding should also include minor deviations observed during oversight activities that can be promptly corrected and verified as completed.

Documentation of findings should include the statement of the specific requirement (e.g. regulatory citation, Laboratory policy, etc.), the description of a programmatic breakdown (if applicable), and objective evidence demonstrating the deficiency.

Strength: A mature process or activity that has consistently demonstrated the ability to meet expectations, or a process or activity that efficiently and effectively facilitates and integrates processes, activities, and resources.

Noteworthy Practice: A positive observation, based on objective assessment data, or a particular practice, procedure, process, or system considered so unique or innovative enough that other organizations within the Laboratory might find it beneficial. Mere compliance with mandatory requirements is not considered to be a noteworthy practice.

It is the responsibility of the Program Director, Group /Section Leader, or Department Manager to perform the actions necessary to closeout the concerns identified by the Program/Department Walk-Throughs according to the requirements of the finding level assigned to the observation. Verification of the closeout is generally performed by the appropriate Safety Coordinator and documented.

4.1.3 Internal Independent Assessments

Group/Section Leaders, Safety Coordinators/Representatives, Assistant Computer Protection Program Managers, Program Directors and Department Managers, Executive Council members, an Electrical Safety Specialist and other technical specialists are involved in independent assessments focused on safety, security, cyber security, and emergency management. Such assessments are also described in a sub-section of Section 10, *Assessment Program* of the ESH&A Program Manual (Manual 10200.002) and section CM-6 of the Ames Laboratory Low Security Controls Baseline.

These independent and topical assessment mechanisms are in addition to the observations by workers, group/section leaders, program directors, and department managers, and are designed to provide objective assessments of conditions in the work place and the status of implementation of regulatory requirements. Independent Walk-Throughs are conducted under the direction of ESH&A according to Procedure 10200.021 *Independent Walk-Throughs*. A walk-through is performed on each Program and Department on an annual basis. ESH&A coordinates these walk-throughs and tracks corrective actions. Observations are defined as findings, strengths, and noteworthy practices based upon consequence and risk potential, as described previously in the Management Assessments section. Also, an Ames Laboratory cyber security team conducts walk-throughs of Program/Department systems on a routine, scheduled basis according to the Laboratory's *Cyber Security Walk-Through Procedure* (Procedure 48400.010). Members of the team have adequate technical understanding of the Laboratory's cyber security requirements and policies and receive orientation on effective walk-through processes.

In addition to the walk-throughs, specialists perform topical appraisals of Ames Laboratory organizations and programs. Ames Laboratory, in agreement with the Ames Site Office, utilizes a graded approach to determine applicability and frequency of specific topics of appraisals as described in Plan 10200.022, *Topical Appraisals*.

4.1.4 Other Structured Operational Awareness Activities

The management oversight of Ames Laboratory starts with the internal oversight processes within the Laboratory itself, includes contractor oversight (Iowa State University) and is augmented with DOE oversight. At the Laboratory level, oversight starts with at least one member of the Executive Council reviewing and approving every activity, whether scientific research, work-for-others (WFO), support function, or any other unique activity reflected by a budget. DOE scientific research proposals are reviewed by the Deputy Director or the Associate Director for Science; WFO proposals are reviewed by the Deputy Director; support function budgets and unique activity proposals are reviewed by the Director and in some cases the Chief Operations Officer (COO). In addition, proposals are reviewed and approved by the Program Director/Department Manager of the proposed activity, the Budget Office, ESH&A Office and Export Control Officer.

ESH&A specialists perform Topical Appraisals on subjects agreed to by the Ames Site Office and the Laboratory. Additional safety related oversight activities include: Inspections of Analytical X-ray Systems, Walk-throughs of radiological controlled areas, observations of electrical and laser work activities. Plant Protection Section conducts daily plant tours and identifies safety, security, and

emergency management related deficiencies. Cyber security personnel perform daily monitoring and surveillance activities for identification of vulnerabilities, protection deficiencies, and intrusion attempts.

Readiness Reviews (Procedure 10200.010, *Readiness Review*) are performed on new activities, and approved activities undergo periodic Readiness Review to ensure laboratory and industrial related activities are performed according to accepted standards. Also, the Laboratory utilizes a documented subcontractor oversight program (Procedure 10200.046, *Subcontractor Oversight*) to review and monitor its limited amount of subcontractor work.

Personal performance, feedback, and improvement goals are addressed through routine supervisor interactions and as part of a documented annual performance review and planning system. These reviews include discussions related to safety and continuous improvement efforts. Group Leaders, Program Directors, and Department Managers are responsible for safety related performance measures as communicated through the *Safety Performance Measures Policy* (Policy 10200.007). *Guidelines for Safety Performance Evaluations* (Guide 10200.002) are provided to assist supervisors in reviewing individuals' safety performance during the annual performance review.

The Laboratory has developed a network of Safety Coordinators and Representatives and Assistant Computer Protection Managers (ACPMs) in each program and department to facilitate communication on workplace security, health, safety and environmental protection issues with the ESH&A office or the Computer Protection Program Manager (CPPM). The roles and responsibilities for these positions vary among organizations and are documented in position description documents. Typically, safety responsibilities include: walk-throughs and surveillance activities, assistance with readiness reviews, and providing consultation to research and support staff; and computer security responsibilities include incident investigation and follow-up and assistance with system administration duties.

4.2 Incident/Events Reporting Process

The Laboratory has developed and implemented a formal, effective, documented process for its Event Reporting Program that identifies issues, reports, analyzes, and addresses operational events, accidents, and injuries. It is applicable to Occurrence Reporting and Processing System (ORPS), Price-Anderson Amendments Act (PAAA), 10 CFR Part 851, and Incidents of Security Concern issues, and includes event investigations, categorization, causal analysis, corrective action development and tracking. Events and incidents are generally identified by an individual's direct observations, a Laboratory screening team, line management walk-throughs, or Independent Walk-Throughs. The Laboratory's screening team consists of a group of individuals representing diverse functional areas such as: fire and plant protection, industrial hygiene, industrial safety, plant engineering, radiation safety, environmental protection, and packaging and transportation. Event categorization is also conducted by a diverse group consisting of the Chief Operations Officer, ESH&A manager, Facilities Services manager, Emergency Coordinator, program director for Safeguards and Security Program, industrial safety specialist, and plant protection and fire protection specialist.

4.2.1 Accident Investigations

The Event Reporting process defines responsibility for investigation of events and the analysis of information for the purpose of improving operations through determination of the causes of events and the appropriateness of corrective actions. A graded approach, based on the significance, severity, or risk associated with the event or condition is utilized when determining the level of effort required for the investigation and causal analysis of an event. Investigation and analysis of events reported as Occurrences, NTS PAAA Non-compliances, and Incidents of Security Concern are performed according to the following guidance. Investigation and analysis of reportable events include:

- Data collection.
- Evaluation and analysis of event information.
- Analysis of causal factor's root cause by application of TapRooT® Root Cause Tree®.
- Analysis of root cause's generic cause by application of TapRooT® Root Cause Tree®.
- Cross code TapRooT® root causes to the apparent causes of the Causal Analysis Tree (DOE Guide 231.1-2, Occurrence Reporting Causal Analysis Guide).
- Develop a summary of output of the TapRooT® Causal Process and Apparent Causes from the DOE Causal Analysis Tree.
- Assign responsibility for Incidents of Security Concern.
- Evaluate proposed corrective actions and ensure appropriateness.
- Ensure Lessons Learned are appropriate.
- Prepare Event Investigation and Analysis Report.

AMES LOCAL, non-reportable, events are investigated and analyzed according to a simplified process patterned after the Reportable Event Investigation and Analysis Process.

4.3 Worker Feedback Mechanisms

The most important and effective process for identification and correction of process deficiencies is the observation of individual employees. Direct line supervisors provide individual work directions, as pre-job briefings, post-job reviews, safety meetings, job hazard walk-downs, etc., and each worker is accountable for performing quality work in a safe and productive manner. Employees are charged with the responsibility of continuously assessing their individual performances and their workspaces in order to prevent problems and to identify nonconforming conditions and opportunities for improvement. Ames Laboratory seeks to promptly address employee concerns about environment, safety and health issues in the workplace. Worker Observations are also described in a sub-section of Section 10, *Assessment Program* of the *ESH&A Program Manual* (Manual 10200.002).

Workers are encouraged to assess their work and work environments in order to identify potential hazards and opportunities for improvement. The *Worker Observation Guide* (Guide 10200.003) is available to assist workers in the observation of activities within office spaces and laboratory/shop spaces. Work deficiencies should be corrected as soon as possible by the workers involved with the activity. Workplace deficiencies should be reported to the first level of management as soon as possible. Resolution of concerns should occur at the level of line management most directly responsible for the activity. If the issue cannot be resolved at this level, the employee is directed to

proceed within his/her line management structure or to report the concern to the Environment, Safety, Health and Assurance (ESH&A) office as part of the Employee Safety and Security Concerns Program (Plan 10200.008, *Employee Safety and Security Concerns Program Implementation Plan*).

Additionally, the Laboratory's *Stop Work Authority* (Policy 10200.005, Section 5.2 of the *ESH&A Program Manual* (Manual 10200.002) provides employees with a process to prevent serious injury, impairment of health, or adverse impact to the environment without waiting for a formal reporting process to initiate corrective actions. The *Readiness Review Procedure* (Procedure 10200.10) is utilized to start up operations that have been shut down under Stop Work Authority.

Employees are initially informed of their worker observation responsibilities through *General Employee Training (Get) For New Employees* (AL-001). Additionally, Program Directors, Department Managers, Group Leaders, and supervisors communicate employee responsibilities through the respective organization's orientation and activity related training. Also, professional and scientific, faculty, and collective bargaining unit workers are provided mechanisms for resolution of employee relations issues, according to established and documented processes.

Ames Laboratory utilizes Iowa State University's EthicsPoint application to provide simple, risk-free ways to anonymously and confidentially report activities that may involve criminal, unethical, or otherwise inappropriate behavior in violation of policies. Employees may file a report to Iowa State University on a web site or by telephone through EthicsPoint by dialing toll-free 866-384-4277. EthicsPoint will not divulge the identity of a hotline reporter without the reporter's consent. No retaliatory action will be taken against anyone for reporting or inquiring in good faith about potential breaches of policies or for seeking guidance on how to handle suspected breaches. Reports submitted via EthicsPoint will be handled promptly and discreetly. Reports are reviewed by ISU Confidential Hotline administrators, who then investigate the claims or refer them to the appropriate university official, such as Ames Laboratory.

4.4 Issues Management

Ames Laboratory organizations assess their processes, and identify and correct deficiencies that hinder them from achieving established objectives. Individuals are responsible for the quality and safety of their work, and supervisors and line managers are accountable for oversight, direction, and guidance of work activities. As defined by the *Event Reporting Program* (Plan 40000.001), it is the policy of Ames Laboratory to encourage a positive attitude toward reporting issues of concern. Event reporting is designed to ensure that Laboratory management and DOE officials are kept fully and currently informed of all events and conditions which could affect the health and safety of the public, seriously impact the intended purpose of Laboratory facilities, have a noticeable adverse effect on the environment, impact safeguards and security, or endanger the health and safety of workers. Potential events are often identified by an individual's direct observations, a Laboratory screening team, line management walk-throughs, or Independent Walk-Throughs.

Although issues identified and corrected at the worker level of line management are managed by informal processes, the Laboratory utilizes formal, documented processes to ensure that issues identified through its numerous institutional oversight mechanisms are investigated, reviewed,

analyzed, reported, trended, and shared. Issues from these oversight mechanisms are analyzed for causal analysis. Corrective action plan development and tracking is performed according to an established process. Trend analysis is conducted to identify programmatic or systemic issues. Also, appropriate reports are developed and shared with oversight organizations, regulatory bodies, and other research facilities.

4.4.1 Causal Analysis

The *Event Reporting Program* (Plan 40000.001) defines responsibility for investigation of events and the analysis of information for the purpose of improving operations through determination of the causes of events and the appropriateness of corrective actions. A graded approach, based on the significance, severity, or risk associated with the event or condition is utilized when determining the level of effort required for the investigation and causal analysis of an event. Investigation and analysis of events reported as Occurrences, Noncompliance Tracking System (NTS) PAAA Noncompliances, and Incidents of Security Concern is primarily performed according System Improvements' TapRooT® Causal Process. Each causal factor's root cause is analyzed by application of TapRooT® Root Cause Tree®. Each root cause's generic cause is analyzed by application of TapRooT® Root Cause Tree®. Output of TapRooT® Root Cause Tree® and additional guidance is utilized to cross code TapRooT® root causes to the apparent causes of the Causal Analysis Tree (DOE Guide 231.1-2, *Occurrence Reporting Causal Analysis Guide*). The Causal Analysis Tree delineates specific designations of cause such as: Design/Engineering problem, Equipment/Materials problem, Human Performance LTA (less than adequate), Management Problem, Communications LTA (less than adequate), Training Deficiency, and other. A summary of output of the TapRooT® Causal Process and Apparent Causes from the DOE Causal Analysis Tree is developed; including a description each identified cause, and a brief discussion to clearly link the cause to the event. In addition to determining the causes of the occurrence, any weaknesses in implementation of the facility's ISMS and ISSMS programs are identified.

4.4.2 Corrective Action Development, Tracking and Verification

Corrective Action Plans are developed according to established procedures. The responsibilities for development, tracking and verification of closure for corrective actions related to reportable events are outlined in Procedure 10200.039, *Corrective Action Development, Tracking, and Verification*. Line management has responsibility for the development of corrective actions, with consensus of the issue identifier and ESH&A. ESH&A's Industrial Safety Specialist has responsibility for tracking corrective actions. Line management and ESH&A have responsibility for verification of completion and effectiveness of corrective actions. The following guidance is utilized to ensure corrective actions are designed to correct the identified need and to prevent recurrence of the deficiency:

- Develop an understanding of the basis, scope and cause of the deficiency, including the extent of conditions/causal factors that led to the deficiency.
- Provide a description of the proposed action(s) that will effectively resolve the issue(s).
- Examine existing documentation of programs and practices related to the deficiency.
- Designate a responsible individual and associated line management as points of contact for the

corrective action.

- Review resource needs for proposed actions with appropriate line management.
- Develop or modify documentation for programs and practices related to the deficiency.
- Establish a planned completion date for the corrective action, which allows adequate time to address the corrective action and ensures a timely response to the deficiency.
- Include the causal factors of the deficiency in periodic trend analysis (Procedure 10200.041, Trend Analysis of ES&H Concerns).
- Provide a general description of the mechanism used to verify the status of the corrective action, including any specific deliverables, which signify partial or total completion.
- If appropriate, provide a general description of the mechanism used to verify the effectiveness of the corrective action.

4.4.3 Trend Analysis

Information from the various feedback mechanisms described above is reviewed according to the Laboratory's procedure for trend analysis (Procedure 10200.041, *Trend Analysis of ES&H Concern*.). This review is included as part of an annual self-assessment process as detailed in the Appendix B Performance Objectives and Measures of the Laboratory's contract. Results of the trend analysis are also communicated to Laboratory management for review and planning purposes. The Event Screening Team has responsibility for quarterly performance analysis of Ames Laboratory information and events for identification of potential recurring events. The performance analysis includes review of events reported as Occurrences, PAAA Non-compliances, Incidents of Security Concern, and AMES LOCAL events, as well as information from a variety of sources such as the sources utilized for event screening. Event investigators and reporters utilize information from screening activities to produce a Quarterly Performance Analysis Review Report with a list of potential recurring events. Events identified as potentially recurring are submitted to the Event Categorization Team for review and, if warranted, categorized as a recurring occurrence and submitted as a new Occurrence Report.

4.5 Lessons Learned

Ames Laboratory has a formal Lessons Learned program and communicates Lessons Learned to staff via procedures established in the *Lessons Learned Implementation Plan* (Plan 10200.020). Though few of the Ames Laboratory internal lessons learned have warranted sharing with the DOE complex, Ames Laboratory has benefited from some of the lessons learned of other facilities. Recently, DOE issues involving laser safety and electrical safety have been forwarded via e-mail to specific target audiences, as examples.

4.6 Performance Indicators and Measures

Ames Laboratory has multiple mechanisms to measure the performance of its staff, programs, and organizations. The collection, analysis, and correlation of these data is utilized directly or indirectly to assess performance improvement or deterioration, and is assessed relative to established goals. The Laboratory assesses its performance ratings for each Performance Evaluation and Measurement Plan

(PEMP) element in the Laboratory's contract with DOE. Personal and line management performance, feedback, and improvement goals are assessed according to performance measures communicated in the *Safety Performance Measures Policy* (Policy 10200.007). *Guidelines for Safety Performance Evaluations* (Guide 10200.002) are provided to assist supervisors in reviewing individuals' safety performance during the annual performance review. The Laboratory's year-end report includes an overall summary of performance for the period and a summary of key strengths and opportunities for improvement. The performance levels achieved against the specific goals, objectives, measures, and targets are the primary, but not sole, criteria for determining the Laboratory's final performance evaluation and rating.

5.0 REFERENCES

- DOE Policy 226.1, *Department of Energy Oversight Policy*.
- DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*.
- Plan 10200.016, *Ames Laboratory Integrated Safety Management System Description*
- Plan 10200.029, *Ames Laboratory Integrated Safeguards and Security Management System Description*
- Manual 10200.002, *Ames Laboratory Environment, Safety, Health and Assurance (ESH&A) Program Manual*